National Transportation Safety Board
Washington, DC 20594

Brief of Accident

Adopted 01/23/2003

MIA01FA028A
File No. 11754 | 11/16/2000 | BRADENTON, FL | Aircraft Reg No. USAF | Time (Local): 15:48 EST

Make/Model:	Lockheed-Martin / F-16CG
Engine Make/Model:	GE / F110-GE-100
Aircraft Damage:	Destroyed
Number of Engines:	1
Operating Certificate(s):	None
Type of Flight Operation:	Instructional
Reg. Flight Conducted Under:	Part 91: General Aviation

	Fatal	Serious	Minor/None
Crew	0	0	1
Pass	0	0	0

Last Depart. Point:	VALDOSTA, GA
Destination:	Local Flight
Airport Proximity:	Off Airport/Airstrip

Condition of Light:	Day
Weather Info Src:	Weather Observation Facility
Basic Weather:	Visual Conditions
Lowest Ceiling:	None
Visibility:	10.00 SM
Wind Dir/Speed:	210 / 011 Kts
Temperature (°C):	27
Obstr to Vision:	None
Precipitation:	None

Pilot-in-Command Age: 31

Certificate(s)/Rating(s)
Commercial; Multi-engine Land; Single-engine Land
Instrument Ratings
Airplane

Flight Time (Hours)

Total All Aircraft:	1279
Last 90 Days:	93
Total Make/Model:	705
Total Instrument Time:	96

A formation flight of two F-16s departed Moody Air Force Base in Valdosta, Georgia, on an IFR flight plan leading to the entry point for a low-altitude military training route located near Sarasota, Florida. The flight lead pilot was provided an air traffic control (ATC) frequency change from Miami Center to Tampa Approach. The flight was unable to establish communications with Tampa Approach because an incorrect radio frequency was given to the flight lead by Miami Center. The flight lead reestablished radio contact with Miami Center, cancelled the flight's IFR clearance, and proceeded under visual flight rules (VFR). The controller acknowledged the cancellation, advised the F-16 flight lead pilot of traffic in his vicinity, and asked the flight lead pilot if he wanted VFR flight following (a service that includes VFR radar traffic advisories on a workload-permitting basis.). The flight lead pilot declined. The Miami Center controller then informed Tampa Approach that the flight lead pilot had elected to terminate ATC services, but did not specify that there were two aircraft in the flight. Tampa Approach procedures did not require that the controllers use flight strips (which would have included the number of aircraft in the formation), so the Tampa controllers had no other information indicating that there were multiple aircraft present. Continuing their descent under VFR, the two F-16s assumed the fighting wing formation. This placed the accident F-16 on the left side of the lead aircraft and approximately 0.7 miles in trail. The accident F-16s transponder was inactive, as is normal for formation operations, making the aircraft significantly less conspicuous on ATC radar than it would be with an operating transponder. At an unknown point in the flight, the F-16 lead pilots navigation system developed a position error and was indicating that the aircraft was several miles from its actual position. The pilot failed to recognize the error, and was attempting to visually locate the entry point for the training route based on the erroneous navigation data. Because of the lead pilots loss of situational awareness, the two F-16s inadvertently descended into the Class C airspace surrounding the Sarasota, Florida airport without establishing required communications with ATC. Meanwhile, a Cessna 172 pilot departed Sarasota under VFR and contacted Tampa Approach. The Cessna pilot was

instructed by the developmental controller receiving instruction to maintain 1,600 feet, turn left to a heading of 320-degrees, and to follow the shoreline. At 15:47:10, he was instructed to climb and maintain 3,500 feet. Miami Center contacted Tampa Approach at 15:47:55, and asked for the altitude of the F-16s. Although the Tampa controller was not in contact with the F-16s, he was able to locate the flight lead on the radar display and informed Miami that the flight lead was at 2,000 feet. A conflict alert between the lead F-16 and the Cessna activated 10 times between 15:47:39 and 15:48:03. The developmental controller stated that he heard an alarm, but could not recall where it was. The controller providing the instruction did not recall if he saw or heard a conflict alert, and no conflict alert was issued. There was no alert generated between the accident F-16 and the Cessna because the conflict alert system requires that both aircraft involved have operating transponders. The developmental controller informed the Cessna pilot at 15:48:09 that he had traffic off his left side, but received no response. The controllers were unaware of the position of the other (accident) F-16 in the formation flight. At 15:48:53, the lead F-16 transmitted, Mayday, mayday. At 15:49:14, the flight lead pilot followed with, "Mayday, mayday, mayday, F-16 down." Examination of the wreckage of both airplanes determined that the accident F-16's left wing and cockpit area collided with the Cessna 172's right forward side (nose) and cabin area.

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Occurrence #1: MIDAIR COLLISION
Phase of Operation: MANEUVERING

Findings
1. (F) FLIGHT/NAV INSTRUMENTS,ELEC FLT INFO SYST (EFIS) - MALFUNCTION
2. (C) COMMUNICATIONS/INFORMATION/ATC - DISCONTINUED - PILOT OF OTHER AIRCRAFT
3. (C) VISUAL LOOKOUT - NOT MAINTAINED - PILOT IN COMMAND
4. (C) ARTCC SERVICE - NOT ISSUED - ATC PERSONNEL(DEP/APCH)
5. (F) ARTCC SERVICE - NOT FOLLOWED - FLIGHTCREW

Findings Legend: (C) = Cause, (F) = Factor

The National Transportation Safety Board determines the probable cause(s) of this accident as follows.
the failure of the F-16 flight lead pilot and F-16 accident pilot to maintain an adequate visual lookout while maneuvering. Factors contributing to the accident were: the F-16 flight lead pilots decision to discontinue radar traffic advisory service, the F-16 flight lead pilots failure to identify a position error in his aircrafts navigational system, the F-16 pilots subsequent inadvertent entry into class C airspace without establishing and maintaining required communications with air traffic control (ATC); and ATCs lack of awareness that there was more than one F-16 aircraft in the formation flight, which reduced the ATC controllers ability to detect and resolve the conflict that resulted in the collision.